

What is claimed is:

1. A method for fabricating a capacitor of a semiconductor device, comprising the steps of:

- 5 (a) forming a conductive silicon layer for a bottom electrode on a substrate;
- (b) nitridating the conductive silicon layer;
- (c) oxidizing the nitridated conductive silicon layer;
- 10 (d) forming a silicon nitride layer on a surface of the oxidized layer;
- (e) forming a dielectric layer on the silicon nitride layer; and
- (f) forming a top electrode on the dielectric layer.

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2. The method as recited in claim 1, wherein at the step (c), a native oxide layer is used.

3. The method as recited in claim 2, wherein the
20 native oxide layer is formed in a thickness ranging from about 1 Å to about 5 Å.

4. The method as recited in claim 3, wherein at the step (b), a thermal treatment process is carried out in an
25 atmosphere of NH_3 gas and at a pressure ranging from about 10 Torr to about 100 Torr.

5. The method as recited in claim 4, wherein the silicon nitride layer is formed by using a source of
30 dichlorosilane (DCS) in an atmosphere of NH_3 gas and at a pressure ranging from about 1 Torr to about 10 Torr.

6. The method as recited in claim 3, wherein the

dielectric layer is comprised of a material having one of a high dielectric constant and being a ferroelectric substance.

- 5 7. The method as recited in claim 6, wherein the material is one selected from a group of Ta_2O_5 , Al_2O_3 , HfO_2 , $(Ba,Sr)TiO_3$ (BST), $(Pb,Zr)TiO_3$ (PZT), $(Pb,La)(Zr,Ti)O_3$ (PBZT) and $Bi_4-xLa_xTi_3O_{12}$ (BLT).